



## Upgrading ROMMON on RSP modules

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This section shows the details of upgrading ROMMON on RSP modules .

- [Upgrading the ROMMON on the RSP2 Module, on page 1](#)
- [Upgrading the ROMMON on the RSP3 Module, on page 4](#)

### Upgrading the ROMMON on the RSP2 Module

The RSP2 router has two ROMMON regions (ROM0 and ROM1). We recommend you to perform upgrade on both ROMMON regions. The ROMMON upgrade procedures are applicable to Cisco ASR 903, NCS 4206-16, and Cisco ASR 907 routers.



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**Caution** To avoid actions that might make your system unable to boot, read this entire section before starting the upgrade.

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Use the following methods to upgrade ROMMON:

1. Upgrade ROMMON Using Commands
2. Auto Upgrade

### Upgrade ROMMON Using Commands

#### Procedure

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- Step 1** Check the RSP bootup ROMMON region (ROM0 or ROM1). The example, shows the RSP boots up from ROM0 region.

**Example:**

```
System Bootstrap, Version 15.2(1r)S1, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2011 by cisco Systems, Inc.
Compiled Wed 07-Dec-11 07:33 by tinhuang
Current image running: Boot ROM0
```

**Step 2** Copy the ROMMON image to the bootflash on the Cisco router.

**Example:**

```
copy bootflash:asr900_15_6_48r_s_rommon.pkg
```

**Step 3** Use the **upgrade rom-monitor filename** *asr900\_15\_6\_48r\_s\_rommon.pkg* command to upgrade the ROMMON on both active and standby RSPs.

**Note** Step 3 upgrades the ROMMON region of the RSP that is not used (ROM 1 region).

**Step 4** Reload the router. Ensure that the device is booted from the upgraded region ROM1.

**Example:**

```
System Bootstrap, Version 15.6(12r)S, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2016 by cisco Systems, Inc.
Compiled Sun 29-May-16 08:45 by sabind
Starting Initialization of FMAN0
Loading ucode for FMAN0, size: 31424, ver: 106.04.14
fixup address:7ffff278 contentsoffixup:7ffff000
DCFG_CCSR_PORSR1(cfg_0_9 pins):22FB7F7F
RC Vendor ID[0x8241957]
PEX up stream Vendor ID[0x860910b5]
PEX down stream vendor ID [0x860910b5]
FPGA vendor ID[0x5f1137]
PCI Configuration done..
IOFPGA version[16040627]
```

```
Current image running: Boot ROM0
Last reset cause: RSP-Board
Rommon upgrade requested
Flash upgrade reset 1 in progress
.....BootPage Setting Done - Next DDR-init
```

```
System Bootstrap, Version 15.6(48r)S, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2017 by cisco Systems, Inc.
Compiled Sat 07-Jan-17 10:23 by sabind
Starting Initialization of FMAN0
Loading ucode for FMAN0, size: 31424, ver: 106.04.14
fixup address:7ffff278 contentsoffixup:7ffff000
DCFG_CCSR_PORSR1(cfg_0_9 pins):22FB7F7F
RC Vendor ID[0x8241957]
PEX up stream Vendor ID[0x860910b5]
PEX down stream vendor ID [0x860910b5]
FPGA vendor ID[0x5f1137]
PCI Configuration done..
IOFPGA version[16040627]
```

```
Current image running: *Upgrade in progress* Boot ROM1
Last reset cause: BootRomUpgrade
Configuring zarlink...
We're coming up from a flash upgrade reset cookie
C-Inlet temp 32C
ARAD-0 temp 44C
UEA platform with 3670016 Kbytes of main memory

We're coming up from a flash upgrade reset cookie
```

**Step 5** After successful boot up of the IOS XE image, repeat Step 3 to Step 4 to update the other region on the Cisco router (ROM0) region in this procedure.

**Note** We recommend that both region ROM0 and ROM1 are upgraded.

**Note** Starting with Cisco IOS XE Amsterdam 17.3.1, secondary partition upgrade should be performed only after loading version 17.3.1.

## Example: Verifying ROMMON Upgrade on the RSP2 Module

Use the show platform command to verify the ROMMON upgrade.

## Auto Upgrade on the RSP2 Module

*Table 1: Feature History*

Secondary ROMMON Version Auto Upgrade	Cisco IOS XE Bengaluru 17.5.1	After primary ROMMON version is auto upgraded, secondary ROMMON version auto upgrade process takes place. The secondary ROMMON upgrade is only completed during the next planned manual reload of the router.
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The router running ROMMON version that is lower than the version bundled in Cisco IOS XE is auto upgraded to the bundled version during a router restart. However, if a Cisco IOS XE release with ROMMON image is bundled with a version lower than the running ROMMON version, the ROMMON is not auto downgraded.



**Caution** To avoid actions that might make your system unable to boot, read this entire section before starting the upgrade.

- The ROMMON auto upgrade process starts when the router is booted with Cisco IOS XE version that supports ROMMON auto upgrade. Routers are automatically reloaded during the ROMMON auto upgrade process.
- The auto upgrade process does not occur once the upgrade of ROMMON is complete.
- The running ROMMON version is not auto downgraded if ROMMON image in Cisco IOS XE is bundled with a version lower than that of the running ROMMON version.
- A minimum disk space of 2 MB is required in the boot flash memory file system for a successful ROMMON auto upgrade process. For a disk space lesser than 2 MB, ROMMON auto upgrade fails and the router reboots.
- For Cisco IOS XE Amsterdam Release 17.3.x, Cisco IOS XE Bengaluru Release 17.4.x, and earlier, the secondary ROMMON partition is *not* auto upgraded. You must manually upgrade it using the **upgrade rom-mon filename** command.

- Any future secure ROMMON upgrade or downgrade is only possible from Cisco IOS XE Amsterdam Release 17.3.1 onwards.
- Starting with ROMMON release version 15.6(43r)S, ROMMON version is secure. Once the ROMMON version is upgraded, it cannot be downgraded to a non-secure ROMMON version.
- Starting with Cisco IOS XE Bengaluru release, 17.5.1, after primary ROMMON version is auto upgraded, secondary ROMMON version auto upgrade process takes place. The secondary ROMMON upgrade is only completed during the next planned manual reload of the router.
- Any non-secure FPGA bundled releases moving to Cisco IOS XE Bengaluru Release 17.3.x or future releases can result in an FPGA upgrade and a ROMMON upgrade. If FPGA upgrade happens parallelly with the ROMMON upgrade, you can only expect a single reload. If FPGA upgrade gets delayed and happens post ROMMON upgrade, two reloads are expected to complete both the upgrade processes. This is followed by a successful bootup of the target release image.

## Upgrading the ROMMON on the RSP3 Module

The RSP3 router has two ROMMON regions (ROM0 and ROM1). We recommend you to perform upgrade on both ROMMON regions. The ROMMON upgrade procedures are applicable to routers.



**Caution** To avoid actions that might make your system unable to boot, read this entire section before starting the upgrade.



**Note** Starting with Cisco IOS XE Bengaluru Release 17.6.1, the 15.6(49r)S ROMMON version filters the restricted ROMMON variables during the bootup. This helps to restrict the privileged mode of operations that can impact the router.

Use the following methods to upgrade ROMMON:

1. Upgrade ROMMON Using Commands
2. Auto Upgrade

### Upgrading ROMMON Using Commands

Cisco IOS-XE supports the usual ROMMON upgrade procedure where both the RPs can be upgraded at the same time or can be done on each RP separately. Use the following command to upgrade the ROMMON:

- **upgrade rom-monitor file bootflash:<file> all/R0/R1**



**Note** You must reload the router manually to complete the upgrade process.

To upgrade ROMMON using commands:

1. Check the RSP bootup ROMMON region (ROM0 or ROM1). The example, shows the RSP boots up from ROM0 region.

**Example:**

```
System Bootstrap, Version 15.2(1r)S1, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2011 by cisco Systems, Inc.
Compiled Wed 07-Dec-11 07:33 by tinhuang
Current image running: Boot ROM0
```

2. Copy the ROMMON image to the bootflash on the active and standby RSP.

**Example:**

```
copy bootflash:rsp3_15_6_33r_s_rommon.pkg
```

3. Use the **upgrade rom-monitor filename** *rsp3\_15\_6\_33r\_s\_rommon.pkg* **R0** command to upgrade the version.




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**Note** R0 represents RSP in slot 0 of the router. Step 3 upgrades the ROMMON region of the RSP that is not used (ROM1 region) as ROM 0 region is used in Step 1 to boot up the RSP.

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4. Upgrade the ROMMON on the Standby RSP (for high availability) using the **upgrade rom-monitor filename** *bootflash:rsp3\_15\_6\_33r\_s\_rommon.pkg* **R1** command.




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**Note** R1 represents the RSP in slot 1 of the router. Step 4 upgrades the ROMMON region of the RSP that is not used (ROM 1 region).

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5. Reload the router. Ensure that the device is booted from the upgraded region ROM1.

**Example:**

```
System Bootstrap, Version 15.6(12r)S, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2016 by cisco Systems, Inc.
Compiled Sun 29-May-16 08:45 by sabind
Starting Initialization of FMAN0
Loading ucode for FMAN0, size: 31424, ver: 106.04.14
fixup address:7ffff278 contentsoffixup:7ffff000
DCFG_CCSR_PORSR1(cfg_0_9 pins):22FB7F7F
RC Vendor ID[0x8241957]
PEX up stream Vendor ID[0x860910b5]
PEX down stream vendor ID [0x860910b5]
FPGA vendor ID[0x5f1137]
PCI Configuration done..
IOFPGA version[16040627]
Current image running: Boot ROM0
Last reset cause: RSP-Board
Rommon upgrade requested
Flash upgrade reset 1 in progress
.....BootPage Setting Done - Next DDR-init

System Bootstrap, Version 15.6(33r)S, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2017 by cisco Systems, Inc.
Compiled Sat 07-Jan-17 10:23 by sabind
```

### Example: Verifying ROMMON Upgrade on the RSP3 Module

```

Starting Initialization of FMAN0
Loading ucode for FMAN0, size: 31424, ver: 106.04.14
fixup address:7ffff278 contentsoffixup:7ffff000
DCFG_CCSR_PORSR1(cfg_0_9 pins):22FB7F7F
RC Vendor ID[0x8241957]
PEX up stream Vendor ID[0x860910b5]
PEX down stream vendor ID [0x860910b5]
FPGA vendor ID[0x5f1137]
PCI Configuration done..
IOFPGA version[16040627]
Current image running: *Upgrade in progress* Boot ROM1
Last reset cause: BootRomUpgrade
Configuring zarlink...
We're coming up from a flash upgrade reset cookie
C-Inlet temp 32C
ARAD-0 temp 44C
UEA platform with 3670016 Kbytes of main memory

We're coming up from a flash upgrade reset cookie

```

- After successful boot up of the IOS XE image, repeat from step 3 to step 5 to update the other region on the RSP (ROM 0) region in this procedure.

## Example: Verifying ROMMON Upgrade on the RSP3 Module

Use the show platform command to verify the ROMMON upgrade.

```

Router# show platform
Chassis type: ASR-903

```

Slot	Type	State	Insert time (ago)
0/0	A900-IMA1X	ok	18:23:52
0/1	A900-IMA8S	ok	18:23:52
0/2	A900-IMA8S1Z	ok	18:22:19
0/3	A900-IMA2Z	ok	18:21:43
0/4	A900-IMA8Z	ok	18:23:52
0/5	A900-IMA8T	ok	18:23:52
R0	A900-RSP3C-200-S	ok, active	18:25:38
R1		unknown	18:25:38
F0		ok, active	18:25:38
F1		unknown	18:25:38
P0	A900-PWR550-A	ok	18:24:54
P1	A900-PWR550-D	ps, fail	18:24:52
P2	A903-FAN	ok	18:24:50

Slot	CPLD Version	Firmware Version
R0	16040627	15.6(14r)S
R1	16040627	15.6(14r)S
F0	16040627	15.6(14r)S
F1	16040627	15.6(14r)S



**Note** We recommend you to upgrade both the regions, ROM0 and ROM1.

## Auto Upgrade on the RSP3 Module

**Table 2: Feature History**

Feature Name	Release Information	Description
Secondary ROMMON Partition Auto Upgrade	Cisco IOS XE Bengaluru 17.4.1	This feature supports secondary ROMMON partition auto upgrade after a successful primary ROMMON partition is complete.

Router running ROMMON version that is lower than version bundled in Cisco IOS XE is auto upgraded to the bundled version during a router restart. However, if a Cisco IOS XE release with ROMMON image is bundled with a version lower than the running ROMMON version, the ROMMON is not auto downgraded.

**Table 3: Supported Bundled ROMMON Versions on Cisco IOS XE Release Versions**

Cisco IOS XE Version	Bundled ROMMON Version
Cisco IOS XE Fuji Release 16.9.5, Cisco IOS XE Gibraltar Release 16.12.3, Cisco IOS XE Amsterdam Release 17.2.1, and higher	15.6(33r)S
Cisco IOS XE Amsterdam Release 17.3.1, Cisco IOS XE Bengaluru Release 17.4.1, Cisco IOS XE Bengaluru Release 17.5.1, and higher	15.6(42r)S

- The ROMMON auto upgrade process starts when the router is booted with Cisco IOS XE version that supports ROMMON auto upgrade. Routers are automatically reloaded during the ROMMON auto upgrade process.
- The auto upgrade process does not occur once the upgrade of ROMMON is complete.
- The running ROMMON version is not auto downgraded if ROMMON image in Cisco IOS XE is bundled with a version lower than that of the running ROMMON version.
- A minimum disk space of 2 MB is required in the boot flash memory file system for a successful ROMMON auto upgrade process. For a disk space lesser than 2 MB, ROMMON auto upgrade fails and the router reboots.
- Starting with Cisco IOS XE Amsterdam Release 17.3.2 and Cisco IOS XE Bengaluru Release 17.4.1, secondary ROMMON partition is also auto upgraded after a successful primary ROMMON partition upgrade is complete. You can reload the router at the next planned reload to complete the secondary ROMMON upgrade.
- For Cisco IOS XE Amsterdam Release 17.3.1 and earlier, the secondary ROMMON partition is not auto upgraded. You must manually upgrade it using the **upgrade rom-mon filename** command.
- Starting with ROMMON release version 15.6(42r)S, ROMMON is secure. Once the ROMMON version is upgraded, it cannot be downgraded to a non-secure ROMMON version.

